REMARKS

In an Office Action dated September 4, 2003, claims 1-6 and 9-11, all of the claims under consideration in the subject patent application, were rejected. By amendment above, claim 1 has been rewritten and new claims 34-36 have been added. Support for the amendments to claim 1 can be found on page 7, lines 5-10, page 8, lines 20-31, page 23 lines 13-36, page 24, lines 17-39 and Figure 3 of the specification. Support for new claim 34 can be found on page 7, lines 5-10, where it is disclosed that "the channels may be – depending on the surface properties – capillary channels, support for new claim 35 can be found on page 19, lines 1-11, where it is disclosed that a large number of reaction regions are in each channel, each reaction region serving for the binding and detection of a specific analyte, and support for new claim 36 can be found on page 19, lines 1-11 (describing the dimensional orientation of reaction regions in the channel or channels) and page 24, lines 17-39, describing that the reaction surface has been increased in the channel by providing the three dimensional support in which reactions can occur. By Amendment above applicants also submit an abstract of the disclosure and amended the application inserting "Brief Description of the Drawings" on page 40.

Reconsideration of this application and allowance of the claims is respectfully requested in view of the foregoing amendments and the following remarks.

The Examiner has objected to the specification because the application does not contain an abstract of the disclosure and a "Brief Description of the Drawings" heading. Applicants have amended the specification to include an abstract of the disclosure, submitted on a separate sheet, and inserted the title "Brief Description of the Drawings", describing the drawings in the specification. Applicants submit that this correction makes the objection moot and request

withdrawal of the Examiner's objection to the specification. Further, applicants submit that this correction of the specification does not add new matter to the specification.

Claims 1-6 and 9-11 were under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. According to the Examiner the claim(s) contain subject matter not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors at the time the application was filed had possession of the claimed invention. The Examiner asserted that during PCT practice claim 1 was amended to recite "at least one closed channel ...", in which the term "closed" lacks support in the specification. The Examiner therefore asserted that new matter has been added to the application. Applicants disagree, but submit that the term "closed" in "at least one closed channel" is cancelled from claim 1, as amended. Applicants further submit that claim 1 as amended now includes "at least one channel, comprising a conduit having an inlet and an outlet for passing fluid from the inlet to the outlet, in the support body", for which support can be found in the specification.

Applicants therefore submit that claims 1-6 and 9-11 of the pending application are described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Withdrawal of the rejection is respectfully requested.

The Examiner also asserted that the application can be construed as a continuation-in-part application. This assertion is based on the "new matter rejection" discussed above. According to the Examiner Applicants need, if they desire to obtain the benefit of the filing date of the prior application, to direct their attention to 35 U.S.C. §120 and 37 CFR 1.78. In addition, the Examiner asserts that, based on the assertion that the application is a continuation-in-part

application, the oath or declaration is defective. Applicants submit that no new matter has been added to the application as discussed above. The claimed invention, as amended, in the application currently pending is supported by the specification and no new matter has been added. Therefore, Applicants submit that the assertions of the Examiner regarding Priority and the Oath/Declaration are moot.

Claims 1-6 and 11 were rejected under 35 U.S.C. §103(a) as obvious over Dehlinger (WO 97/19749) and Winkler et al. (US 5,677,195). The Examiner asserts that Dehlinger teaches the use of an array of "tubes" to which polymeric receptors (e.g. nucleotides) are site and/or time immobilized on the surface in predetermined positions thereof by passing a liquid containing nucleotide monomers which are individually polymerized for ultimate use in analyte screening assays. Further, the Examiner states that although the Dehlinger reference does not explicitly teach light induced polymerization, Winkler et al teach that light polymerization can be alternatively used in microchannel array syntheses as a means of inducing polymerization. According to the Examiner Winkler et al provides motivation to one of ordinary skill in the art to employ a light induced polymerization technique in the Dehlinger method for forming polymeric receptors for screening purposes.

Applicants submit that Dehlinger teaches an array of tubes which can be plugged or unplugged at one end in order to let a chemical reaction occur. The array of tubes or channels as taught by Dehlinger however are not suitable for permitting photoillumination reactions to occur inside the tubes for synthesizing receptors on the walls of the tubes or channels. Therefore, the tubes or channels in the array as taught by Dehlinger are different from the channels in the support body of the current invention. In contrast to Dehlinger the channels in the support body

of the currently claimed invention allow for photoillumination reactions for the synthesis of the receptors on the wall of the channels to occur. In fact Dehlinger teaches that photoillumination has certain limitations in synthesizing receptors in a library and attempts to overcome these limitations as can be seen on page 3 lines 22-34 of the Dehlinger reference. Thus, Dehlinger teaches away from using photoillumination in the tubes or channels of the array.

Furthermore, Dehlinger teaches that large-library planar arrays are limited in their use in screening techniques of analytes, as can be seen on pages 3 line 35 to page 4 line 4, of Dehlinger. According to Dehlinger there is not sufficient surface area for receptors to attach to synthesize a large-library array. In contrast, in the current invention it is taught that the support comprises at least one channel. Each channel in the current invention provides for a large number of reaction regions. Each reaction region in a single channel provides for the reaction of a particular polymeric receptor. Therefore, each reaction region in a single channel provides for the binding and detection of a specific analyte. The channels in the support body as claimed in the current invention thus will allow for a large-library array of receptors in a three dimensional area where the different receptors will be in a closer proximity to each other than the planar arrays which Dehlinger teaches as being undesirable. Therefore, for this reason also Dehlinger teaches away from the currently claimed invention.

The Winkler et al reference teaches the use of a flat surface with depression and trenches onto which the receptors are synthesized. This flat surface or biochip is mounted on a support which may have channels for the delivery of reactants to the surface of the biochip for synthesis of the desired receptors. The synthesis reactions on the biochip surface may use photoillumination. However, these reactions are only occurring on a two dimensional surface

(the flat surface) and will therefore only create a two dimensional arrangement of different receptors for analytes. In contrast, the current invention provides for the photoillumination reaction on a three dimensional surface, a channel in a support body, resulting in a three dimensional arrangement of the receptors for determining analytes in a sample. Therefore, Winkler et al discloses a very different surface onto which the receptors for analytes are being synthesized. The Winkler et al reference is not complimenting the deficiencies of the Dehlinger reference in teaching the currently claimed invention. In addition, there is no motivation to combine the two references, as Dehlinger teaches away from using photoillumination, whereas Winkler et al is directed to the synthesis of a biochip using photoillumination as a method of synthesis. Moreover, Dehlinger discloses the limitations of synthesizing large-library planar arrays which are, according to Dehlinger, necessarily limited in the amount (number of molecules) of each library species whereas Winkler et al. discloses a large-library planar array, thereby negating any motivation to combine Dehlinger with Winkler et al.

Applicants therefore submit that claims 1-6 and 11 of the pending application are not obvious over Dehlinger (WO 97/19749) and Winkler et al (US 5,677,195). Withdrawal of the rejection is respectfully requested.

Claim 1-6 and 9-11 were rejected under 35 U.S.C. §103(a) as obvious over Dehlinger and Winkler et al as applied to claims 1-6 and 11, and further in view of Fodor et al (WO 92/10092). The Examiner asserts that the combined Dehlinger and Winkler et al references teaching differs from the presently claimed invention by failing to explicitly teach the use of a (computer) programmable light source matrix e.g. to determine the pattern of polymeric receptors. Further, the Examiner states that Winkler et al acknowledges that the Fodor method is an elegant method

for using a computer-controlled system to direct a VLSIPS procedure. Therefore, according to the Examiner, Winkler et al provides motivation to employ the Fodor automated light strategy in order to achieve an elegant screening technique. Thus, the Examiner asserted it would have been obvious to modify the combined Dehlinger and Winkler et al teaching to employ the Fodor et al method of using a (computer) programmable light source matrix in order to determine the pattern of polymeric receptors in an elegant manner.

Applicants submit that, as discussed above, the method according to claim 1 is unobvious over Dehlinger and Winkler et al as Dehlinger teaches an array of tubes which are not to be used for photoillumination of the reaction mixture. Moreover, Dehlinger teaches away from using photoillumination in the synthesis of receptors on the tubes of the array, as can be seen on page 3 lines 22-34. In contrast, Winkler et al does not teach an array of channels but a flat surface of a biochip, onto which polymeric receptors may be synthesized using photoillumination. Therefore, as discussed above there is no motivation to combine Dehlinger and Winkler et al as these references are in very divergent areas of the technological field of synthesizing large-library arrays. Fodor et al teaches the use of a computer to address locations on a substrate for synthesizing large-library arrays using photoillumination. Fodor et al does not teach or suggest the channels in a support body of the current invention either alone or in combination with Dehlinger and Winkler et al. Furthermore, Fodor's light programmable light source matrix in order to determine the pattern of polymeric receptors on a substrate does not cure the deficiencies of the teachings of Dehlinger and Winkler et al, because the combination of these three references does not teach or suggest the currently claimed invention of at least one channel in a support body for the synthesis of a large-library array using photoillumination.

Applicants therefore submit that claims 1-6 and 9-11 of the pending application are not obvious over Dehlinger (WO 97/19749) and Winkler et al (US 5,677,195) in further view of Fodor et al (WO 92/10092). Withdrawal of the rejection is respectfully requested.

Applicants submit that the present application is now in condition for allowance.

Reconsideration and favorable action are earnestly requested.

RESPECTFULLY SUBMITTED,					
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